MODEL 34–PNB PLUG-IN NOISE BLANKER

GENERAL DESCRIPTION.

The 34—PNB Noise Blanker is a solid-state unit designed for use with the TR—4C and TR—4 Transceivers. Unlike noise clippers or limiters commonly found in communications equipment, this is an advanced noise blanker which mutes the receiver for the duration of the noise pulse. Between noise pulses full receiver gain is restored. Receiver AGC is affected only by the desired signal and not by noise. The 34—PNB is most effective on strong, periodic noise impulses such as automobile ignition noise.

INSTALLATION.

Disconnect the power connector from the TR—4C or TR—4. Remove the top half of the transceiver cabinet. Remove the 7 pin jumper plug located in front of the power amplifier cage. With the printed circuit side of the 34—PNB facing the outside of the transceiver chassis, carefully plug in the 34—PNB. After it is correctly seated in the socket, install a number 4 self-tapping screw in each corner of the 34—PNB bracket to secure it to the transceiver chassis. Replace the cabinet top.

OPERATION.

The BLANKER switch on the transceiver is used to turn the accessory 34—PNB Noise Blanker on and off. The Noise Blanker may be left on except when there is a strong signal within 5 kHz of the received signal. A strong signal which falls within the 10 kHz wide crystal filter in the Noise Blanker, and outside the 2.1 kHz wide crystal filter in the transceiver, will operate the Noise Blanker gate circuit causing distortion products. This limitation in the Noise Blanker is caused by the necessity of having a bandwidth in the blanker wide enough to minimize stretching of noise pulses before blanking. Under normal operating conditions, this limitation is no problem.

CIRCUIT DESCRIPTION.

This noise blanker system is composed of the three major networks described below. Refer to the block diagram and schematic diagram to follow this circuit description.

TRANSMITTING PATH.

The transmitting path consists of a single RC coupled 9 MHz amplifier which passes the transmitter signal through the blanker. The signal then passes through the crystal filter passband and into the transmitter mixer.

RECEIVER PATH.

The signal first passes through a crystal filter with a bandwidth wide enough to pass most of the noise frequency components but narrow enough to keep strong adjacent signals from overloading the noise blanker amplifier. The signal simultaneously enters the noise processor and the delay circuit, a reactive network which compensates for the inherent phase-shift of the noise processing section. The 9 MHz receive amplifier provides an overall system gain for the receive path. The balanced gate is an electronic series switch that opens for noise pulses but closes to allow the signal to pass.

NOISE PROCESSOR.

The signal passes through the tuned 9 MHz amplifier and into the balanced mixer. This mixer converts the 9 MHz noise pulses to 2150 kHz and prevents the high level 6.85 MHz oscillator signal from reaching the amplifier strip. The 2150 kHz noise pulses pass through the two amplifiers, the detector and into the gate driver. The driver reverse-biases the gate at the instant a 9 MHz noise pulse enters on its way to the receiver IF. The gate then is controlled by the same pulse it is blanking, enabling it to respond automatically to pulses of varying width.

ALIGNMENT.

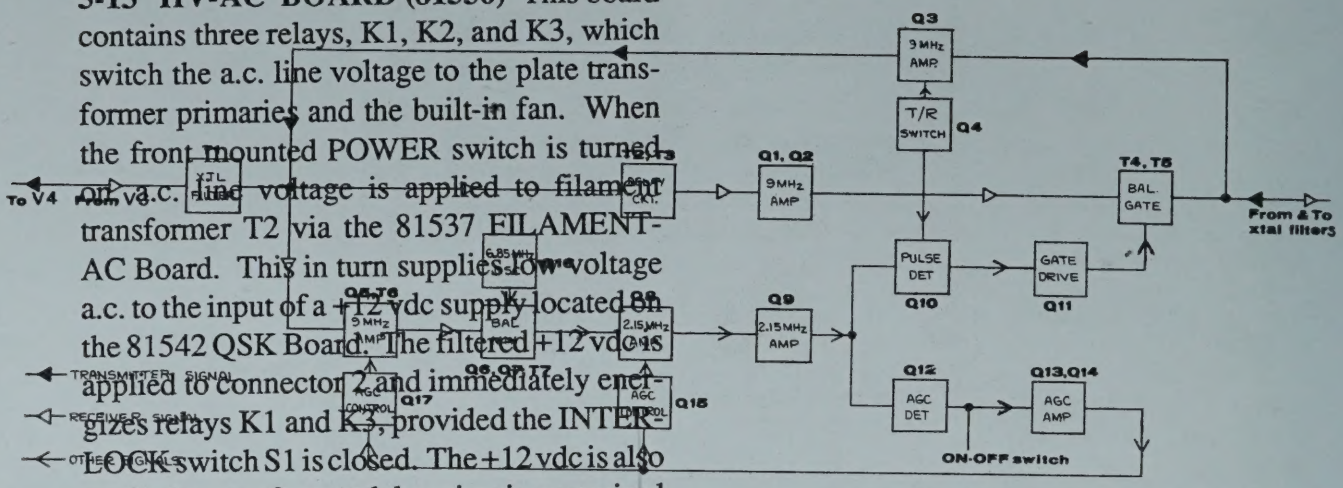
Refer to the component location illustration to locate the alignment points.

a. With the noise blanker turned on, adjust capacitor trimmers C10 and C19 for maximum S meter reading on calibrator signal.

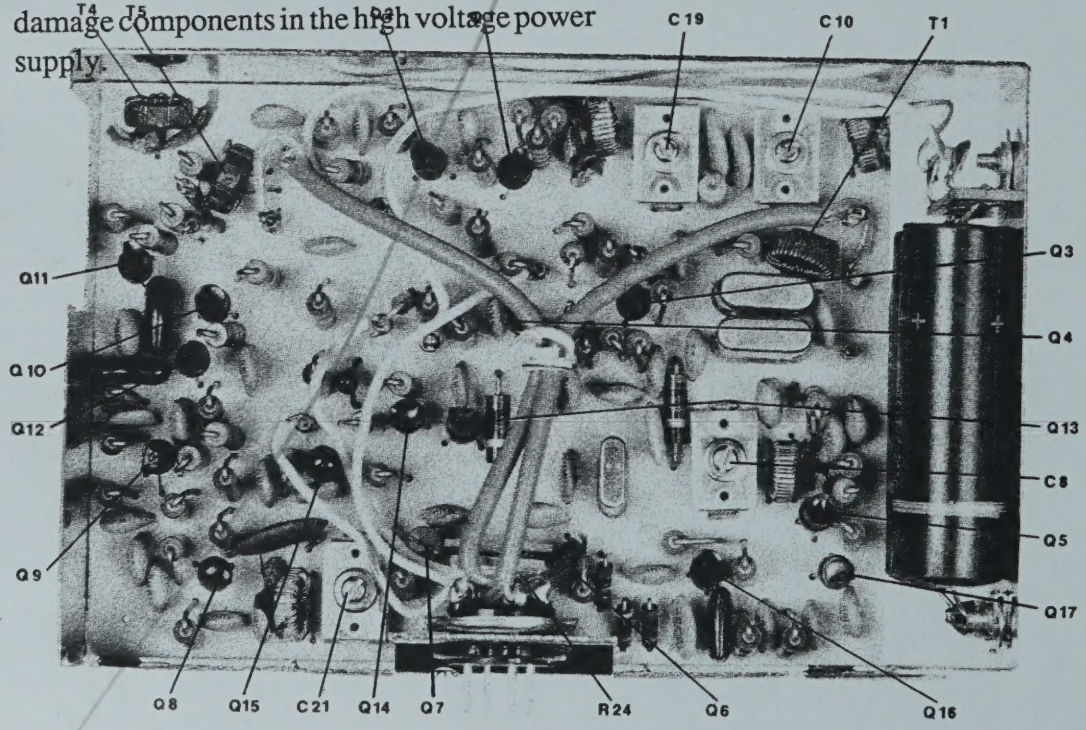
b. With the calibrator turned off, connect a VTVM (set to measure DC voltage) to terminal 4 of the 34—PNB board and ground (terminal 4 being plus). Adjust R24 for maximum positive voltage.

c. Turn the calibrator on and adjust the two remaining trimmers C21 and C8 for minimum positive voltage.

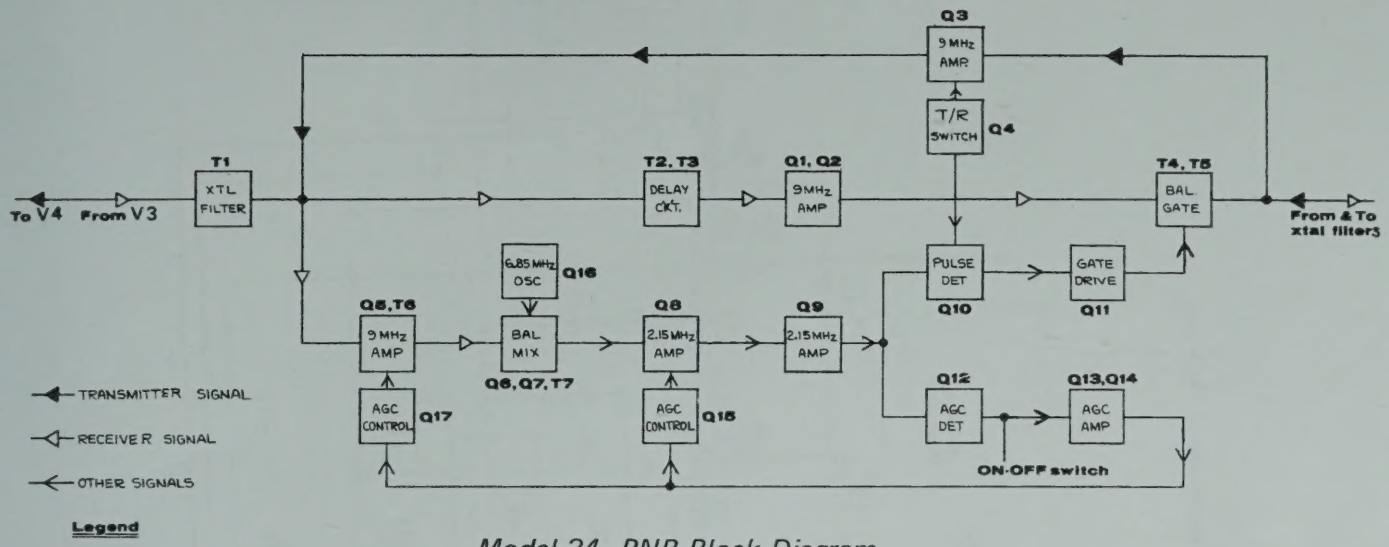
5-13 HV-AC BOARD (81536) This board contains three relays, K1, K2, and K3, which switch the a.c. line voltage to the plate transformer primaries and the built-in fan. When the front mounted POWER switch is turned on, a.c. line voltage is applied to filament transformer T2 via the 81537 FILAMENT-AC Board. This in turn supplies low voltage a.c. to the input of a +12 vdc supply located on the 81542 QSK Board. The filtered +12 vdc is applied to connector 2 and immediately energizes relays K1 and K3, provided the INTERLOCK switch S1 is closed. The +12 vdc is also applied to a soft-start delay circuit comprised of Q1, R1-R3, and C2. This provides about a one second delay before energizing relay K2. Before K2 is turned on, current limited a.c. line voltage is applied to plate transformer T1 via resistor R4. When K2 is turned on, R4 is bypassed and the full a.c. line voltage is applied to T1. This soft-start circuit reduces turn on transients which might otherwise damage components in the high voltage power supply.



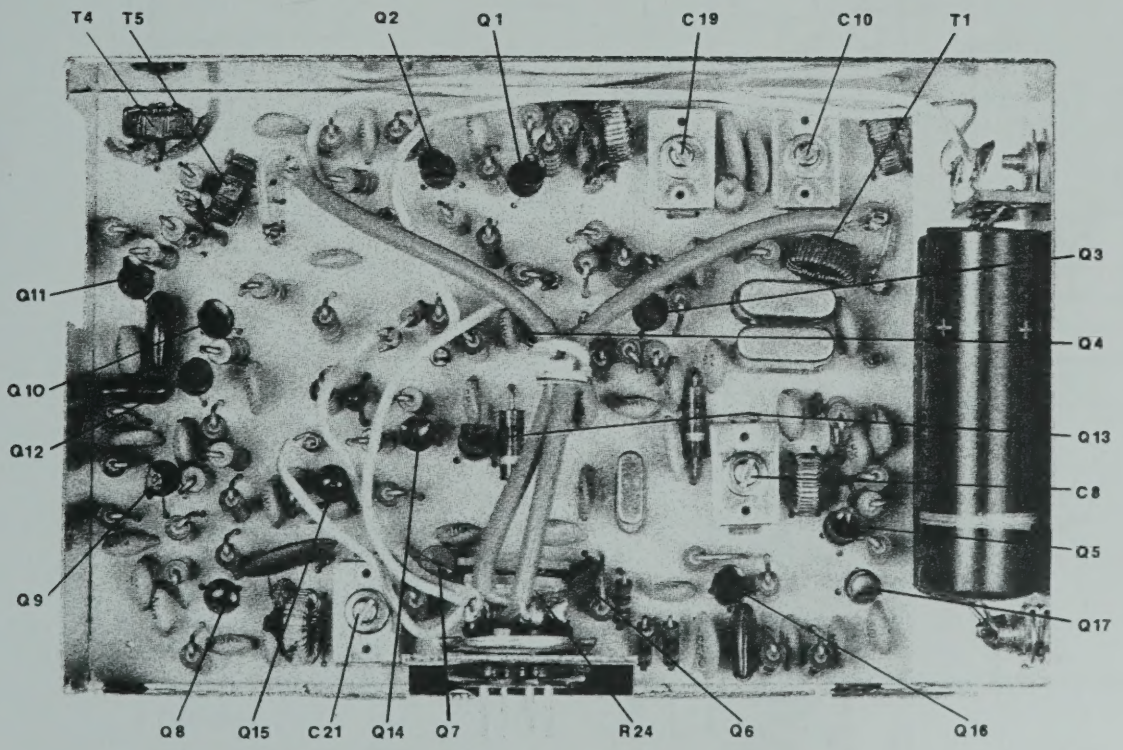
Model 34-PNB Block Diagram



Model 34—PNB Alignment Locations



Model 34–PNB Block Diagram



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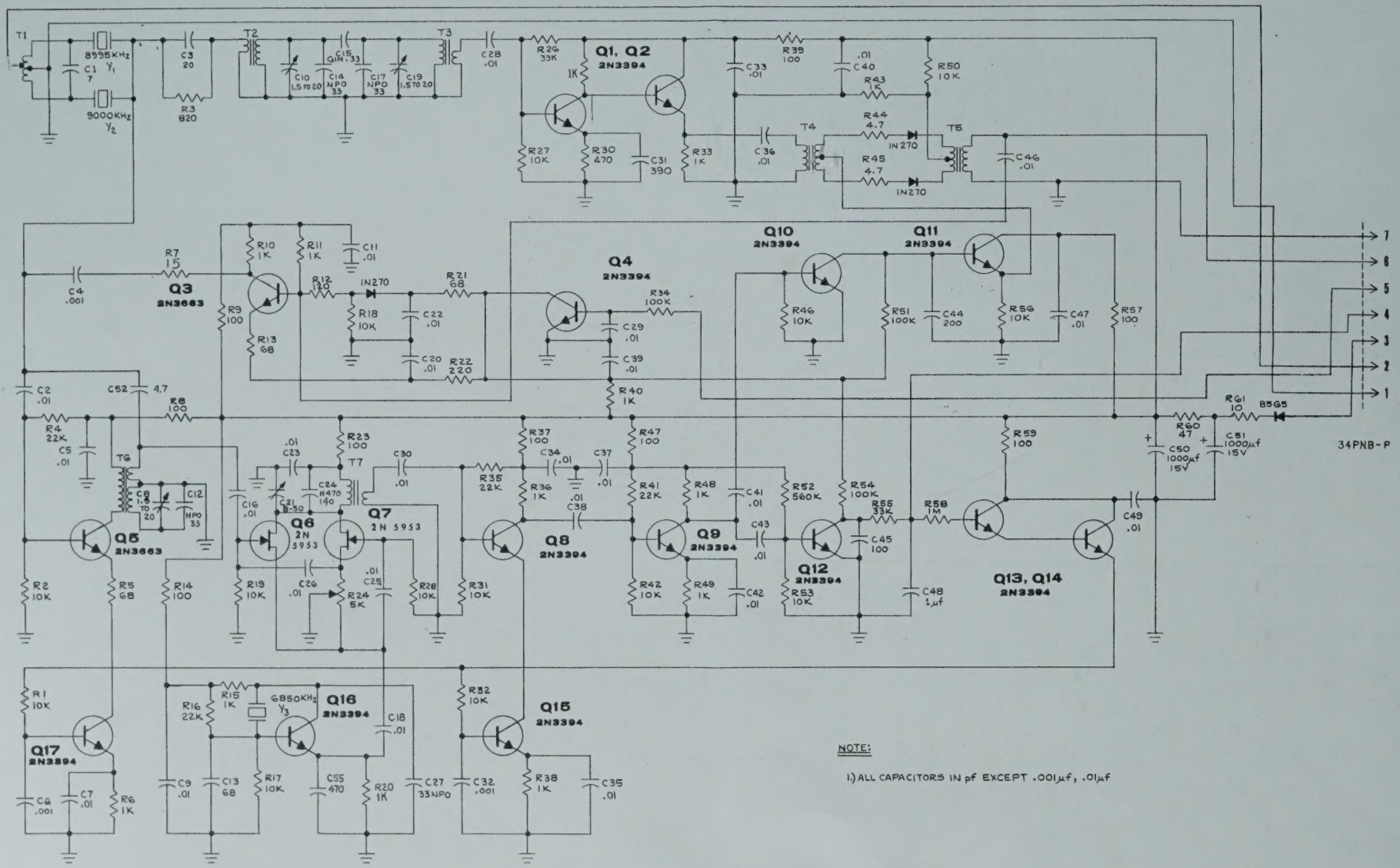

NOTE:

1) ALL CAPACITORS IN pf EXCEPT .001µf, .01µf

Model 34—PNB Schematic Diagram

5-14 HV RECTIFIER-FILTER BOARD

(81538) This board contains a high voltage bridge rectifier, a filter circuit, and voltage dividers for metering of the plate current and voltage. High voltage a.c. is applied to terminals E and F from the plate transformer T1. Diodes D1-D20 and resistors R17-R36 form a complex high voltage bridge rectifier assembly used to generate the +3100 volts. Five diodes are connected in series in each leg of the bridge to obtain the required breakdown ratings. The high voltage output from the bridge is filtered by eight computer grade electrolytic capacitors, C1-C8. Resistors R1-R16 provide both bleeder action and voltage equalization for the capacitor bank. The filtered high voltage d.c. is applied to terminal G which is connected to the plate circuits of tubes V1 and V2.

Resistors R42, R45 form a voltage divider whose output is routed to the multi-meter circuit via connector 4. This output monitors the high voltage output to the tube plates. Resistors R37 and R38 are used to develope a voltage proportional to the plate current of V1,V2. This voltage is routed to the 81540 DISPLAY Board via connector 4. Resistors R39, R40 are used to monitor the grid current of V1,V2. Resistor R41 is used to bias tubes V1, V2 when in STANDBY operation.

STANDARD WARRANTY

R. L. DRAKE COMPANY warrants each new product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use, and service discloses such defect, provided that such part is returned by the owner to us or to our authorized dealer or wholesaler from whom purchased, intact, for our examination, with all transportation charges prepaid to our factory, within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective. Should a malfunction be suspected, write in detail to our Service Department for suggestions concerning the operation, repair or return of the unit if it should prove necessary.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own or improper installation, or to use in violation of instructions furnished by us, nor extends to units which have been repaired or altered outside our factory, nor in cases where the serial number thereof has been removed, defaced or changed, nor to units used with accessories not manufactured or recommended by us.

Any part of a unit upon which a claim for remedy or exchange hereunder will be remedied or exchanged by the authorized dealer or wholesaler without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

The R. L. DRAKE COMPANY reserves the right to make any improvements to its products which it may deem desirable without obligating itself to install such improvements in its previously manufactured products.